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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/737,265	12/13/2000	Robert M. Fuerst	A1-051 US	1926

23683 7590 10/22/2002

MOLEX INCORPORATED
2222 WELLINGTON COURT
LISLE, IL 60532

EXAMINER

NGUYEN, PHUONGCHI T

ART UNIT PAPER NUMBER

2833

DATE MAILED: 10/22/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/737,265	Applicant(s) FUERST ET AL.	
	Examiner Phuongchi T Nguyen	Art Unit 2833	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 July 2002.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 10-15 is/are allowed.
- 6) ☒ Claim(s) 1-6, 8, 9, 16-21, 23 and 24 is/are rejected.
- 7) ☒ Claim(s) 7 and 22 is/are objected to.
- 8) ☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are objected to by the Examiner.
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

- | | |
|---|--|
| 15) <input type="checkbox"/> Notice of References Cited (PTO-892) | 18) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 16) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 19) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 17) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 20) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Applicant's amendment of July 22, 2002 is acknowledged. It is noted that claims 1, 7, 8, and 9 are amended. The amendment of March 25, 2002 has been entered. However, the marked up copy of the amendment on July 22, 2002 is missing; in the future, this amendment will not be entered.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) The invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1, 6, 8, 16, 21 and 23 are rejected under 35 U.S.C. 102(b) as being anticipated by Johnson et al (US5297968).

In regard to claim 1, Johnson discloses a connector assembly (see Attachment 1) comprising a male connector (A) including a relatively rigid male body member (11) having an edge (B) about which the flexible circuit (16) is wrapped with the first conductors of the circuit (16) facing away from the body member (11) at the edge (B) thereof; and an adapter (C) including a first receptacle (D) for receiving the male connector (A) inserted edge-first into the first receptacle (D), and a second receptacle (E, slot adjacent 20) having first (F) and second openings (G) for receiving the second conductors (on 21, it is inherent) in position for engaging the first conductors (on 16) of the flexible circuit (16) at the edge (B) of the male body member (11).

In regard to claims 8 and 23, Johnson further discloses a second flat flexible circuit (on 21) (see Column 3, line 66) inserted into the first opening (F) of the second receptacle (E, slot adjacent 20) of the adapter (C), the second flexible circuit (on 21) having the second conductors

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(on 21, it is inherent) engageable with the first conductors (on 16, it is inherent) (see Attachment 1).

In regard to claim 16, Johnson discloses a connector assembly comprising a male connector (A) including a relatively rigid male body member (11) having an edge (B) about which the flexible circuit (16) is wrapped with the first conductors (on 16, it is inherent) of the circuit (16) facing away from the body member (11) at the edge (B) thereof; and a female connecting device (C) including a receptacle (D) for receiving the male connector (A) inserted into the receptacle (D), and means on the device (C) for positioning the second conductors (on 21) in engagement with the first conductors (on 16) of the flexible circuit (16) at the edge (B) of the male body member (11) (see Attachment 1).

In regard to claims 6 and 21, (see Attachment 2) Johnson discloses the connector assembly wherein the male body member includes a forward (M) body part (11) having the edge (B) about which the flexible circuit is wrapped and a rearward (N) body part latched to the adapter (C), and spring means (29) between the forward and rearward body parts to bias the forward body part (11) and, thereby, the first conductors of the flexible circuit against the second conductors.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 2-5 and 17-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Johnson et al (US5297968) in view of Perino et al (US6234820B1).

In regard to claims 2 and 17, Johnson lacks a relatively yieldable backing structure. However, Perino teaches a relatively yieldable backing structure (370) on the body member (150, 310) at the edge thereof beneath the flexible circuit (365) for resiliently biasing the first conductors of the circuit (365) (see figure 3). It would have been obvious to one having ordinary skill at the time the invention was made to modify the connector assembly of Johnson by having a relatively yieldable backing structure as taught by Perino for having flexibility to the first conductor of the flexible circuit onto the adapter.

In regard to claims 3 and 18, Johnson lacks a longitudinal resilient strip. However, Perino teaches the body member (150) is elongated and the yieldable backing structure (370) comprises a longitudinal resilient strip along the edge (see figure 3). It would have been obvious to one having ordinary skill at the time the invention was made to modify the connector assembly of Johnson by having a longitudinal resilient strip as taught by Perino for increasing contact areas between the flexible circuit and the male connector body and adapter.

In regard to claims 4 and 19, Johnson lacks a position means. However, Perino teaches positioning means (345) on the body member (150) for locating the flexible circuit wrapped about the edge of the body member (150) (see figure 3). It would have been obvious to one having ordinary skill at the time the invention was made to modify the connector assembly of Johnson by having a positioning means as taught by Perino in order to fixedly hold the flexible circuit onto the male body member.

In regard to claims 5 and 20, it would have been obvious to one having ordinary skill at the time the invention was made to modify the connector assembly of Johnson by having an

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adhesive as taught by Perino for having a good connection between the flexible circuit and the male body member.

6. Claims 9 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Johnson et al (US5297968) in view of Kamono et al (US4973264).

Johnson lacks a plurality of discrete electrical wires. However, Kamono teaches a plurality of discrete electrical wires (50) having second conductors (30) (see figures 2-4). It would have been obvious to one having ordinary skill at the time the invention was made to modify the connector assembly of Johnson by having a plurality of discrete electrical wires as taught by Kamono to engage with the first conductors of the flexible circuit for having a different connection when the user needed.

Allowable Subject Matter

7. Claims 7 and 22 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

8. Claims 10-15 are allowed.

9. The following is a statement of reasons for the indication of allowable subject matter:

In regard to claims 7 and 22, none of prior art teaches or suggests the connector assembly wherein a printed circuit board is inserted into the second opening of the second receptacle of the adapter.

10. Applicant's arguments with respect to claims 1-9 and 16-24 have been considered but are moot in view of the new ground(s) of rejection.

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Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Phuongchi T Nguyen whose telephone number is (703) 305-0729. The examiner can normally be reached on Monday through Thursday from 8:00AM to 4:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paula Bradley can be reached on (703) 308-2319. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 305-7723 for regular communications and (703) 305-7723 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-7722.

October 16, 2002.


RENEE LUEBKE
PRIMARY EXAMINER

United States Patent [19] Johnson et al.

[54] **PLUGGABLE CONNECTOR SYSTEMS FOR FLEXIBLE ETCHED CIRCUITS**

[75] **Inventors:** David C. Johnson, Winston Salem; Keith L. Volz, Jamestown; Warren A. Bates, Winston Salem; Frederick R. Deak, Kernersville; Robert M. Rean, Pfafftown, all of N.C.

[73] **Assignee:** The Whitaker Corporation, Wilmington, Del.

[21] **Appl. No.:** 3,161

[22] **Filed:** Jan. 12, 1993

[51] **Int. Cl.:**

[52] **U.S. Cl.:**

[58] **Field of Search**

References Cited

U.S. PATENT DOCUMENTS

3,154,365	10/1964	Crimmins	439/67
3,486,159	12/1969	Matthews	439/496
3,753,207	8/1973	Maheux et al.	439/496
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[11] **Patent Number:** US005297968A

[45] **Date of Patent:** 5,297,968
Mar. 29, 1994

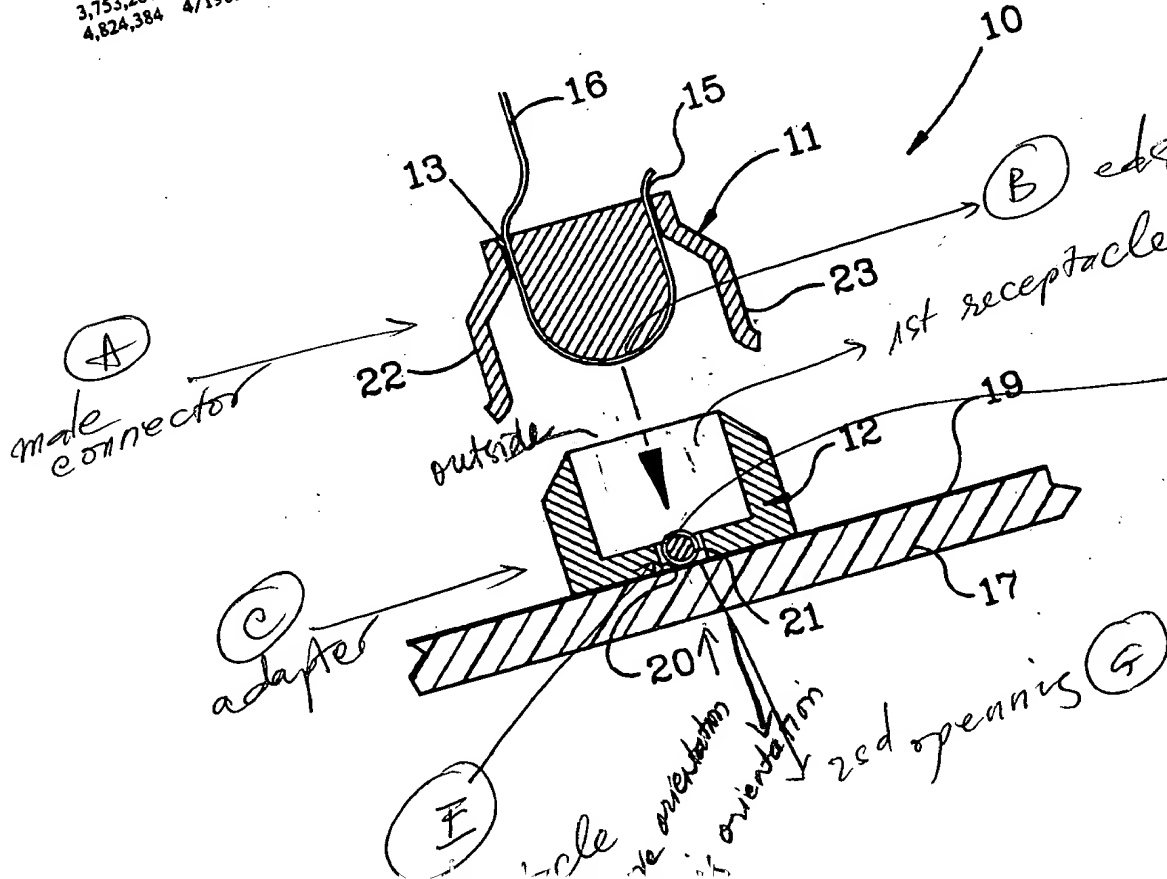
4,940,426 7/1990 Redmond et al. 439/493
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Primary Examiner: Gary F. Paumen
Attorney, Agent, or Firm: William B. Noll

ABSTRACT

[57] A pluggable connector system (10) has a male housing (11, 11', 11'', 11''') snapped together with a female housing (12, 12', 12'', 12''') thereby providing a quick-disconnect feature. One of the housings, or both, carries a flexible etched circuit (16). The flexible etched circuit (16) may engage another flexible etched circuit (16) or, via a suitable interface, may engage a printed circuit board (17) having at least one circuit pad (19) thereon. One embodiment of a suitable interface is a flexible electrical connector (21) having a plurality of circuit traces on an elastomeric core. In another embodiment, the flexible etched circuit (16) is backed up by resilient means (33, 35) and engages the circuit pad (19) directly. The means for releasably retaining the housings (11, 11', 11'', 11''') and 12, 12', 12'', 12''') comprises a pair of spring-loaded manually-releasable latches (24, 24', 25) or a pair of bifurcated latching ears (43, 44).

12 Claims, 16 Drawing Sheets



A. Hallman

U.S. Patent

Mar. 29, 1994

Sheet 1 of 16

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